Operating Instructions

External display and adjustment unit for plics® sensors

VEGADIS 61

Document ID: 27720

Contents

1 About this document
1.1 Function ... 4
1.2 Target group ... 4
1.3 Symbols used ... 4

2 For your safety
2.1 Authorised personnel ... 5
2.2 Appropriate use ... 5
2.3 Warning about incorrect use ... 5
2.4 General safety instructions ... 5
2.5 Safety label on the instrument ... 6
2.6 CE conformity ... 6
2.7 NAMUR recommendations ... 6
2.8 Safety instructions for Ex areas ... 6
2.9 Environmental instructions ... 6

3 Product description
3.1 Configuration ... 7
3.2 Principle of operation ... 8
3.3 Packaging, transport and storage ... 10

4 Mounting
4.1 General instructions ... 11
4.2 Mounting instructions ... 11

5 Connecting to the sensor
5.1 Preparing the connection ... 13
5.2 Connection procedure ... 13
5.3 Wiring plan ... 14

6 Set up with the display and adjustment module
6.1 Short description ... 16
6.2 Insert display and adjustment module ... 16
6.3 Adjustment system ... 17
6.4 Setup steps ... 18

7 Maintenance and fault rectification
7.1 Maintenance ... 19
7.2 Rectify faults ... 19
7.3 How to proceed if a repair is needed ... 19

8 Dismount
8.1 Dismounting steps ... 20
8.2 Disposal ... 20

9 Supplement
9.1 Technical data ... 21
9.2 Dimensions ... 23

27720-EN-140801

Supplementary documentation

Information:
Supplementary documents appropriate to the ordered version come with the delivery. You can find them listed in chapter "*Product description*".

Editing status:2014-07-07

1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This operating instructions manual is directed to trained specialist personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbols used

Information, tip, note
This symbol indicates helpful additional information.

Caution: If this warning is ignored, faults or malfunctions can result.

Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.

Ex applications
This symbol indicates special instructions for Ex applications.

SIL applications
This symbol indicates instructions for functional safety which must be taken into account particularly for safety-relevant applications.

- **List**
  The dot set in front indicates a list with no implied sequence.

→ **Action**
This arrow indicates a single action.

1 **Sequence of actions**
Numbers set in front indicate successive steps in a procedure.

Battery disposal
This symbol indicates special information about the disposal of batteries and accumulators.

27720-EN-140801

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

During work on and with the device the required personal protective equipment must always be worn.

2.2 Appropriate use

VEGADIS 61 is an external display and adjustment unit for VEGA plics® sensors.

You can find detailed information about the area of application in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

2.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

This is a state-of-the-art instrument complying with all prevailing regulations and guidelines. The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for the trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

The safety instructions in this operating instructions manual, the national installation standards as well as the valid safety regulations and accident prevention rules must be observed by the user.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

The safety approval markings and safety tips on the device must also be observed.

2.5 Safety label on the instrument

The safety approval markings and safety tips on the device must be observed.

2.6 CE conformity

The device fulfills the legal requirements of the applicable EC guidelines. By affixing the CE marking, we confirm successful testing of the product.

You can find the CE Certificate of Conformity in the download section of our homepage.

2.7 NAMUR recommendations

NAMUR is the automation technology user association in the process industry in Germany. The published NAMUR recommendations are accepted as the standard in field instrumentation.

The device fulfills the requirements of the following NAMUR recommendations:

- NE 21 – Electromagnetic compatibility of equipment
- NE 53 – Compatibility of field devices and display/adjustment components

2.8 Safety instructions for Ex areas

Please note the Ex-specific safety information for installation and operation in Ex areas. These safety instructions are part of the operating instructions manual and come with the Ex-approved instruments.

2.9 Environmental instructions

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Please help us fulfill this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Display and adjustment unit VEGADIS 61
- Cable entry M20 x 1 for the sensor
- Documentation
  - this operating instructions manual
  - Operating instructions manual 27835 "*Display and adjustment module PLICSCOM*"
  - Supplementary instructions manual 31708 "*Heating for display and adjustment module PLICSCOM*" (optional)
  - Ex-specific "*Safety instructions*" (with Ex versions)
  - if necessary, further certificates

Constituent parts

The VEGADIS 61 consists of the components:

- Mounting element (depending on order specification, mounting plate, clip or strap)
- Housing with electronics
- Housing cover with integrated display and adjustment module

The components are available in different versions.

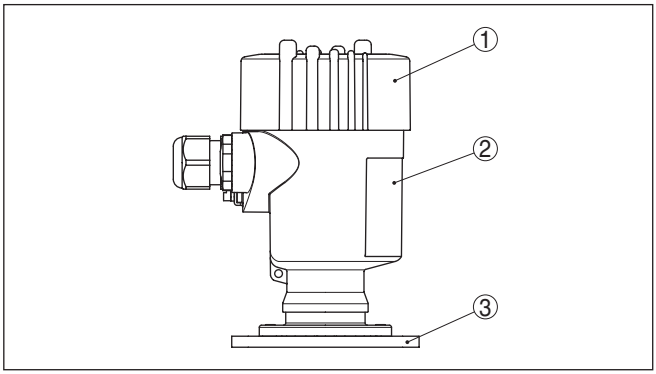

Fig. 1: VEGADIS 61 with plastic housing and mounting plate for wall mounting

1 Housing cover with integrated display and adjustment module
2 Housing with electronics
3 Mounting plate

Type label

The type label on the housing contains the most important data for identification and use of the instrument:

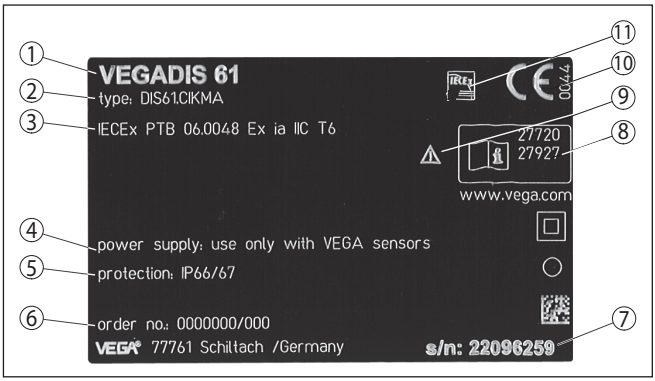

Fig. 2: Layout of the type label (example)

1 *Instrument type*
2 *Product code*
3 *Approval*
4 *Voltage supply*
5 *Protection rating*
6 *Ambient temperature*
7 *Order number*
8 *Serial number of the instrument*
9 *ID numbers, instrument documentation*
10 *Reminder to observe the instrument documentation*
11 *Notified authority for CE marking*
12 *Approval directive*

Serial number

With the serial number of the instrument on the type label you have access to the following data on our homepage:

- Article number of the instrument (HTML)
- Delivery date (HTML)
- Order-specific instrument features (HTML)
- Operating instructions at the time of shipment (PDF)

Go to www.vega.com, "*Service*" "*VEGA Tools*" and "*serial number search*".

3.2 Principle of operation

The VEGADIS 61 is an external display and adjustment unit for VEGA plics® sensors. The device enables remote measured value indication and adjustment of sensors at measuring sites that are difficult to access.

Application examples

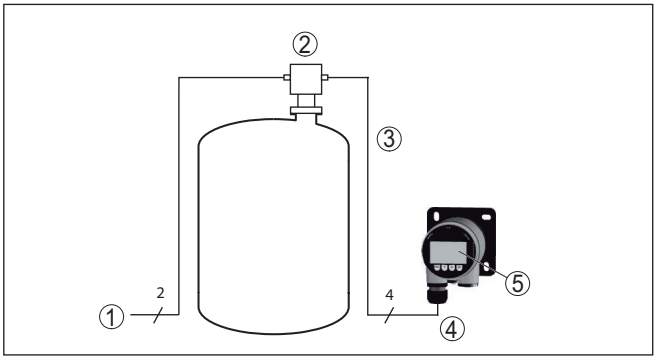

Fig. 3: Connection of VEGADIS 61 to the sensor. The measured value indication and sensor adjustment are carried out via the integrated display and adjustment module

1 *Voltage supply/Signal output sensor*
2 *Sensor*
3 *Connection cable VEGADIS 61 - Sensor*
4 *VEGADIS 61*
5 *Indicating/adjustment module*

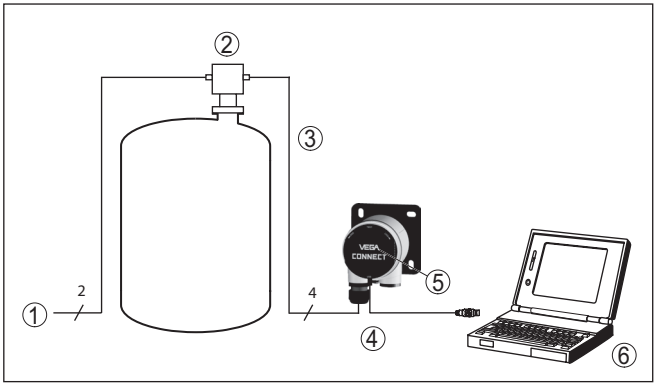

Fig. 4: Connection of VEGADIS 61 to the sensor. The sensor adjustment is carried out via VEGACONNECT and PC with PACTware

1 *Voltage supply/Signal output sensor*
2 *Sensor*
3 *Connection cable VEGADIS 61 - Sensor*
4 *VEGADIS 61*
5 *VEGACONNECT*
6 *PC with PACTware*

Connection

The VEGADIS 61 is connected with a four-wire cable to the sensor. Via this cable, the communication and power supply of VEGADIS 61 is carried out through the sensor. Additional external energy is not required. Permissible cable lengths, see chapter "*Technical data*".

3.3 Packaging, transport and storage

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

The packaging of standard instruments consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.

Transport

Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.

Transport inspection

The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.

Storage

Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.

Unless otherwise indicated, the packages must be stored only under the following conditions:

- Not in the open
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration

Storage and transport temperature

- Storage and transport temperature see chapter "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 … 85 %

4 Mounting

4.1 General instructions

Installation position

VEGADIS 61 functions in any installation position. The housing can be rotated by 330° without the use of any tools.

Moisture

Use the recommended cables (see chapter "*Connecting to power supply*") and tighten the cable gland.

You can give your instrument additional protection against moisture penetration by leading the connection cable downward in front of the cable entry. Rain and condensation water can thus drain off. This applies mainly to outdoor mounting as well as installation in areas where high humidity is expected (e.g. through cleaning processes) or on cooled or heated vessels.

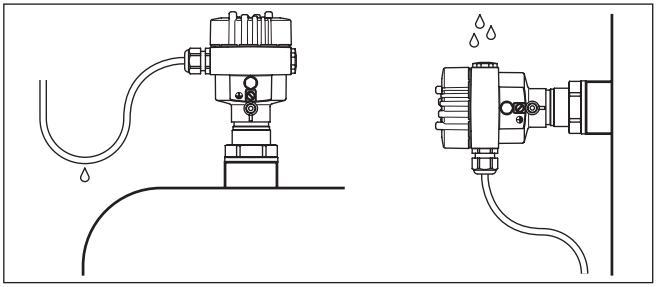

Fig. 5: Measures against moisture ingress

4.2 Mounting instructions

Wall mounting

The VEGADIS 61 for wall mounting is supplied with a mounting socket.

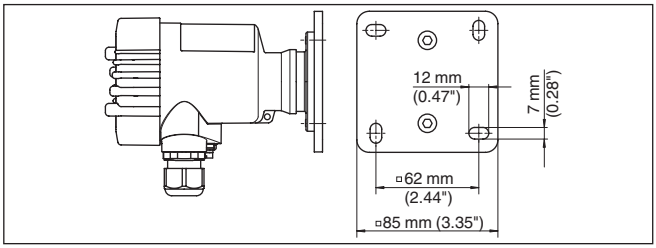

Fig. 6: VEGADIS 61 for wall mounting, bottom view of mounting plate.

1 Drilling dimensions

Carrier rail mounting

VEGADIS 61 for mounting on carrier rail is supplied with a mounting adapter.

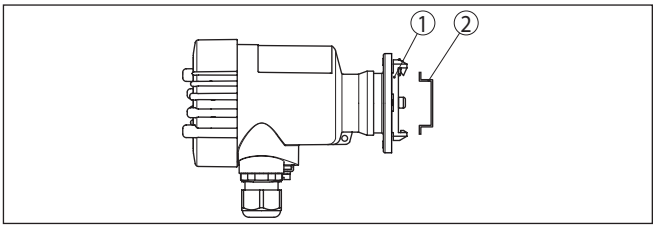

Fig. 7: VEGADIS 61 for carrier rail mounting

1 Adapter plate with screw M4 x 6
2 Carrier rail

Tube mounting

VEGADIS 61 for tube mounting is supplied with a meas. instrument holder and four screws M5 x 12 as mounting accessory. The meas. instrument holder is mounted to the socket of VEGADIS 61.

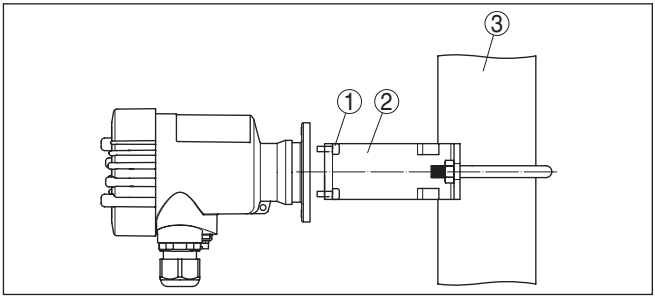

Fig. 8: VEGADIS 61 for mounting on tubes up to 1" diameter

1 4 screws M5 x 12
2 Measuring instrument holder
3 Tube

5 Connecting to the sensor

5.1 Preparing the connection

Safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

Connection cable

VEGADIS 61 is connected to the sensor with standard four-wire cable with screen.

Use cable with round cross-section. A cable outer diameter of 5 … 9 mm (0.2 … 0.35 in) ensures the seal effect of the cable gland. If you are using cable with a different diameter or cross-section, exchange the seal or use a suitable cable gland.

Tip:
We recommend using the matching, ready-made connection cable from the VEGA product line.

Cable screening and grounding

Connect the cable screen on both ends to ground potential. In VEGADIS 61 and in the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the potential equalisation (low impedance).

5.2 Connection procedure

Proceed as follows:

1. Unscrew the housing cover
2. Remove the display and adjustment module by turning it slightly to the left
3. Loosen compression nut of the cable entry gland
4. Remove approx. 10 cm of the cable mantle, strip approx. 1 cm insulation from the individual wires
5. Insert the cable into VEGADIS 61 through the cable entry
6. Lift the opening levers of the terminals with a screwdriver (see following illustration)
7. Insert the wire ends into the open terminals according to the wiring plan
8. Press down the opening levers of the terminals, you will hear the terminal spring closing
9. Check the hold of the wires in the terminals by lightly pulling on them
10. Connect the screen to the ground terminal
11. Connect the ground terminal outside on the housing according to specification (low impedance)
12. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
13. Screw the housing cover back on

The electrical connection is finished.

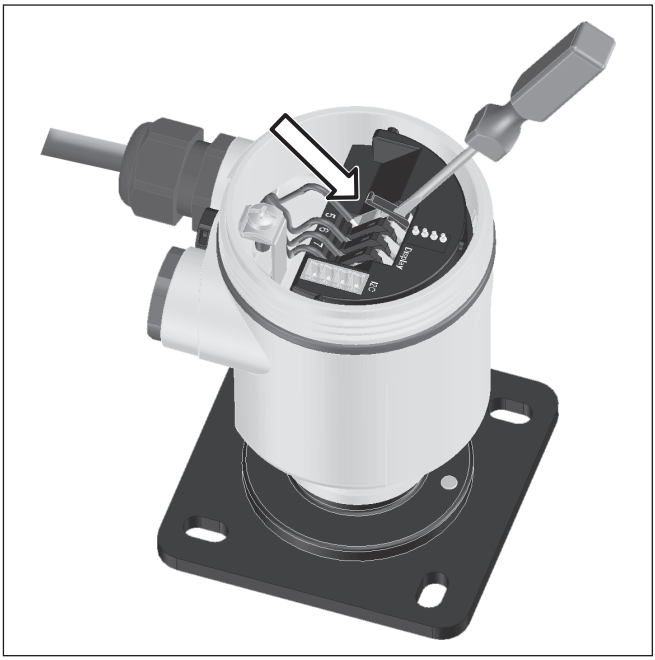

Fig. 9: Connection steps 6 and 7

5.3 Wiring plan

Electronics and terminal compartment

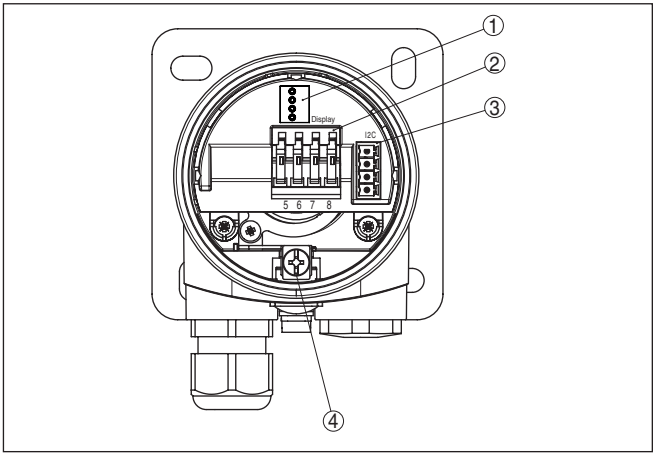

Fig. 10: Electronics and terminal compartment

1 *Contact pins for the display and adjustment module*
2 *Spring-loaded terminals for connection to the sensor*
3 *Plug connector for interface converter*
4 *Ground terminal for connection of the cable screen*

Wiring plan

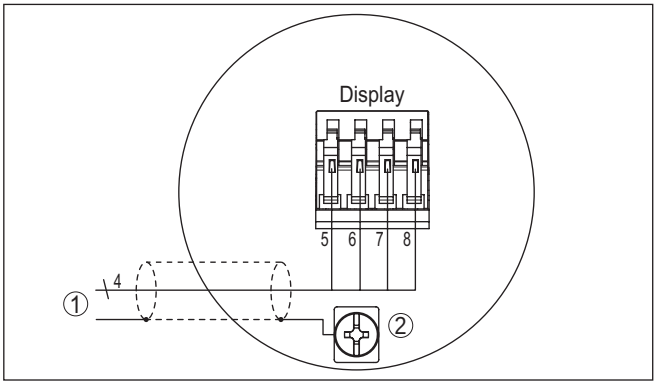

Fig. 11: Wiring plan VEGADIS 61 for 4 … 20 mA/HART sensors

1 To the sensor
2 Ground terminal for connection of the cable screen[1)]

Connection via standard cable
Connection between VEGADIS 61 and sensor is carried out according to the chart:

VEGADIS 61	Sensor
Terminal 5	Terminal 5
Terminal 6	Terminal 6
Terminal 7	Terminal 7
Terminal 8	Terminal 8

Connection via ready-made cable with 4-pin socket M12 x 1
Connection between VEGADIS 61 and sensor with 4-pole plug M12 x 1 is carried out according to the following chart. The specification of the wire colours refers to the confectioned line from our production program[2)]

Wire colour	VEGADIS 61
Brown	Terminal 5
White	Terminal 6
Blue	Terminal 7
Black	Terminal 8

[1)] Connect screen here. Connect ground terminal on the outside of the housing to ground as prescribed. The two terminals are galvanically connected.
[2)] Plug M12 x 1, optionally with double chamber housing.

6 Set up with the display and adjustment module

6.1 Short description

Function/Configuration

The display and adjustment module is used for measured value display, adjustment and diagnosis. It can be mounted in the following housing versions and instruments:

- All continuously measuring sensors in single as well as double chamber housing (optionally in the electronics or connection compartment)
- External display and adjustment unit

Note:
You can find detailed information on adjustment in the operating instructions manual "*Display and adjustment module*".

6.2 Insert display and adjustment module

Mount/Dismount display and adjustment module

The display and adjustment module can be inserted into VEGADIS 61 and removed again at any time. It is not necessary to interrupt the power supply.

Proceed as follows for mounting the display and adjustment module:

1. Unscrew the housing cover
2. Place the display and adjustment module in the desired position on the electronics (you can choose any one of four different positions - each displaced by 90°)
3. Press the display and adjustment module onto the electronics and turn it to the right until it snaps in.
4. Screw housing cover with inspection window tightly back on

Disassembly is carried out in reverse order.

The display and adjustment module is powered by the sensor, an additional connection is not necessary.

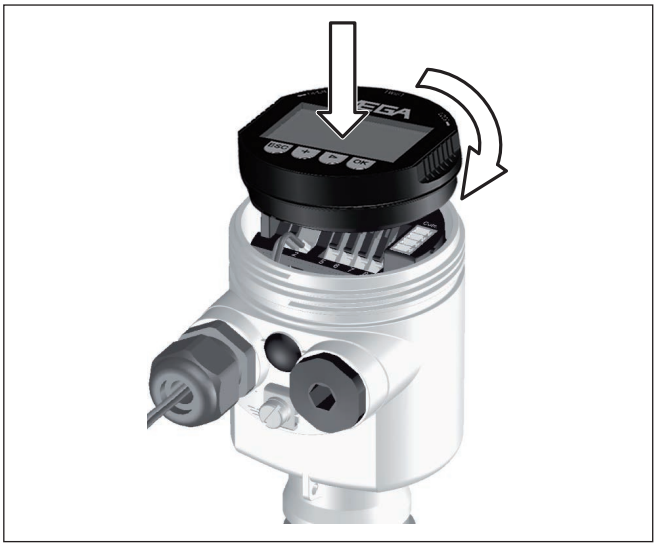

Fig. 12: Installation of the display and adjustment module

6.3 Adjustment system

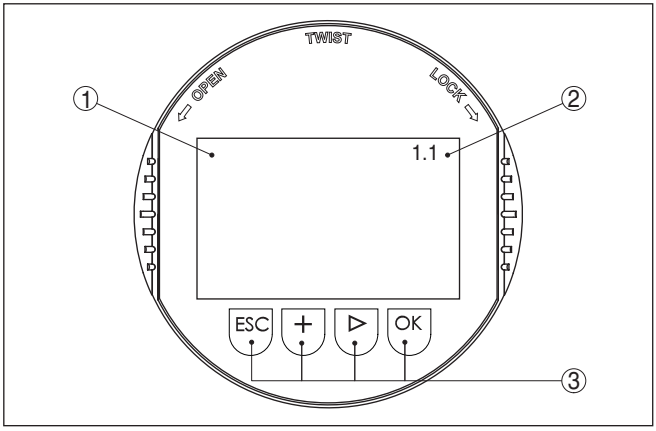

Fig. 13: Display and adjustment elements

1 LC display
2 Indication of the menu item number
3 Adjustment keys

Key functions

- ***[OK]*** key:
  - Move to the menu overview
  - Confirm selected menu
  - Edit parameter
  - Save value

- ***[->]*** key to select:
  - Menu change
  - Select list entry
  - Select editing position
- ***[+]*** key:
  - Change value of the parameter
- ***[ESC]*** key:
  - Interrupt input
  - Jump to next higher menu

Adjustment system

The sensor is adjusted via the four keys of the display and adjustment module. The LC display indicates the individual menu items. The functions of the individual keys are shown in the above illustration. Approx. 10 minutes after the last pressing of a key, an automatic reset to measured value indication is triggered. Any values not confirmed with ***[OK]*** will not be saved.

6.4 Setup steps

Setup and adjustment of the respective sensor is carried out according to the operating instructions manual of the respective sensor.

7 Maintenance and fault rectification

7.1 Maintenance

If the instrument is used properly, no special maintenance is required in normal operation.

7.2 Rectify faults

Reaction when malfunctions occur

The operator of the system is responsible for taking suitable measures to rectify faults.

24 hour service hotline

Should these measures not be successful, please call in urgent cases the VEGA service hotline under the phone no. **+49 1805 858550**.

The hotline is manned 7 days a week round-the-clock. Since we offer this service worldwide, the support is only available in the English language. The service is free, only standard call charges are incurred.

Reaction after fault rectification

Depending on the reason for the fault and the measures taken, the steps described in chapter "*Set up*" may have to be carried out again.

7.3 How to proceed if a repair is needed

You can find a repair form as well as detailed information on how to proceed at www.vega.com/downloads and "*Forms and certificates*".

By doing this you help us carry out the repair quickly and without having to call back for needed information.

If a repair is necessary, please proceed as follows:

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please contact the agency serving you to get the address for the return shipment. You can find the agency on our home page www.vega.com.

8 Dismount

8.1 Dismounting steps

Warning:
Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel or pipeline, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the parts to be easily separable.

WEEE directive 2002/96/EG
This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

9 Supplement

9.1 Technical data

General data	
316L corresponds to 1.4404 or 1.4435, 316Ti corresponds to 1.4571	
Materials VEGADIS 61	
– Housing	plastic PBT, Alu die-casting, 316L
– Inspection window in housing cover for display and adjustment module	Polycarbonate (UL-746-C listed)
– Ground terminal	316Ti/316L
Materials mounting elements	
– Mounting plate	Aluminium, 316L
– Mounting adapter	PVDF
– Measuring instrument holder	316Ti/316L
Weight without mounting element	0.35 kg (0.772 lbs)

Ambient conditions	
Ambient temperature	-15 … +70 °C (+5 … +158 °F)
Storage and transport temperature	-40 … +80 °C (-40 … +176 °F)

Electromechanical data	
Cable gland	1 x cable gland M20 x 1.5 (cable: ø 5 … 9 mm), 1 x blind plug M20 x 1.5 or 1 x closing cap ½ NPT, 1 x blind plug ½ NPT
Spring-loaded terminals for wire cross-section up to	2.5 mm^2 (AWG 14)

Display and adjustment module	
Voltage supply and data transmission	through sensor via gold-plated sliding contacts (I^2C bus)
Indication	LC display in dot matrix
Measured value indication	
– Number of digits	5
– Size of digits (sensors with software ≥ 4.0.0, hardware ≥ 2.0.0)	W x H = 7 x 13 mm
– Size of digits (sensors with software ≥ 3.99, hardware < 2.0.0)	W x H = 5 x 8 mm
Adjustment elements	4 keys
Protection rating	
– unassembled	IP 20
– mounted into VEGADIS 61 without cover	IP 40

27720-EN-140801

Materials	
– Housing	ABS
– Inspection window	Polyester foil

Adjustment circuit

Connection to	the respective sensor
Data transmission	digital (I^2C-Bus)
Configuration, connection cable	4-wire, screened
Cable length max.	
– Radar sensors with software ≥ 4.0.0, hardware ≥ 2.0.0	50 m
– TDR sensors with software ≥ 1.0.0, hardware ≥ 1.0.0	50 m
– Radar and ultrasonic sensors, capacitive sensors, pressure transmitters with software ≤ 3.99, hardware < 2.0.0	25 m

Electrical protective measures

Protection rating	
– Plastic housing	IP 66/IP 67
– Housing Aluminium, stainless steel	IP 66/IP 68 (0.2 bar)

Approvals

Instruments with approvals can have different technical specifications depending on the version.

For that reason the associated approval documents of these instruments have to be carefully noted. They are part of the delivery or can be downloaded under www.vega.com via "*VEGA Tools*" and "*Instrument search*" as well as via "*Downloads*" and "*Approvals*".

9.2 Dimensions

VEGADIS 61 housing

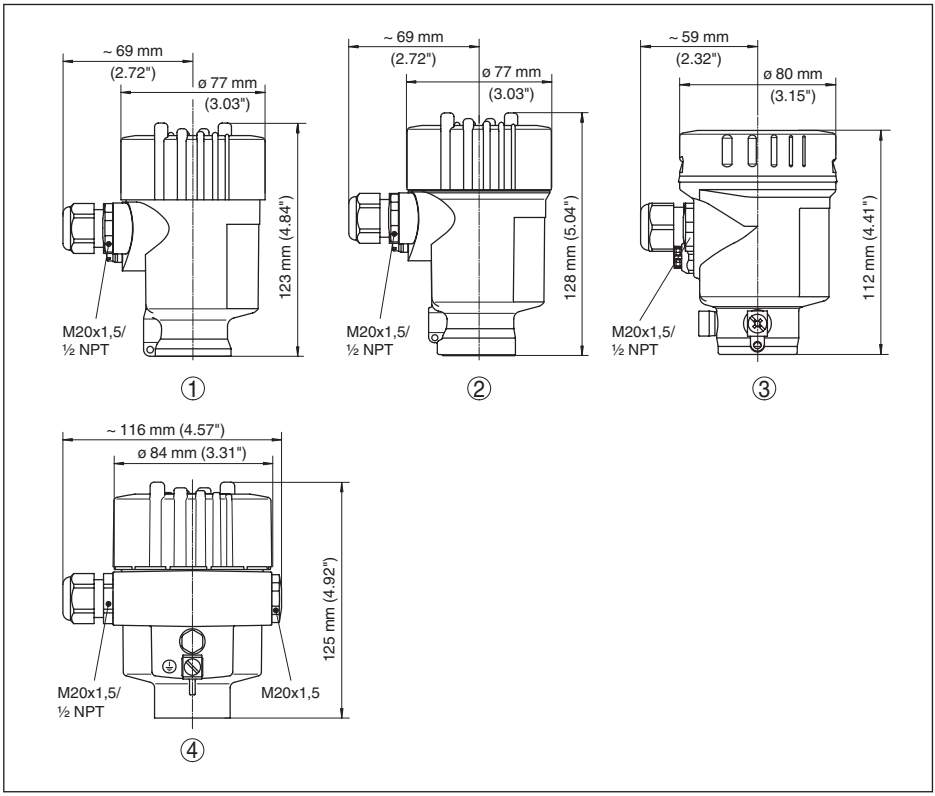

Fig. 14: VEGADIS 61 housing versions

1 *Plastic housing*
2 *Stainless steel housing - precision casting*
3 *Stainless steel housing, electropolished*
4 *Aluminium housing*

VEGADIS 61 mounting elements

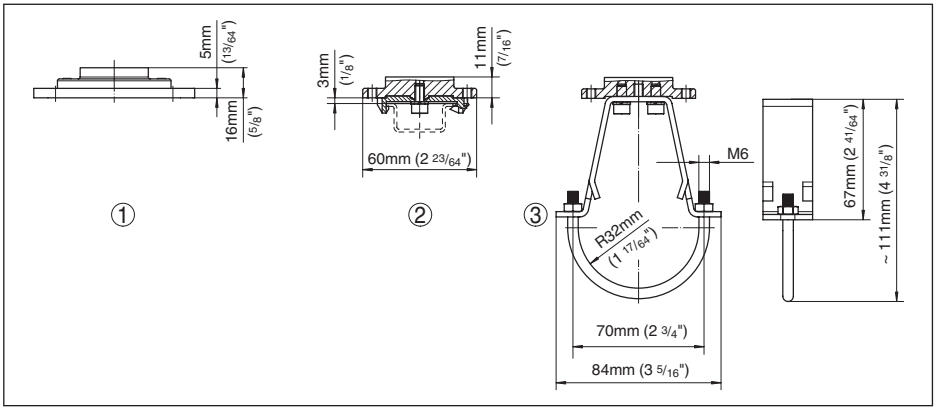

Fig. 15: VEGADIS 61 mounting elements

1 Mounting plate for wall mounting
2 Clip for carrier rail mounting
3 Strap for tube mounting

9.3 Industrial property rights

VEGA product lines are global protected by industrial property rights. Further information see www.vega.com.

Only in U.S.A.: Further information see patent label at the sensor housing.

VEGA Produktfamilien sind weltweit geschützt durch gewerbliche Schutzrechte.

Nähere Informationen unter www.vega.com.

Les lignes de produits VEGA sont globalement protégées par des droits de propriété intellectuelle. Pour plus d'informations, on pourra se référer au site www.vega.com.

VEGA lineas de productos están protegidas por los derechos en el campo de la propiedad industrial. Para mayor información revise la pagina web www.vega.com.

Линии продукции фирмы ВЕГА защищаются по всему миру правами на интеллектуальную собственность. Дальнейшую информацию смотрите на сайте www.vega.com.

VEGA系列产品在全球享有知识产权保护。

进一步信息请参见网站<www.vega.com。

9.4 Trademark

All the brands as well as trade and company names used are property of their lawful proprietor/ originator.

27720-EN-140801

Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

© VEGA Grieshaber KG, Schiltach/Germany 2014

27720-EN-140801

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
Fax +49 7836 50-201
E-mail: info.de@vega.com
www.vega.com